

II B. Tech II Semester Supplementary Examinations, April - 2021
TRANSPORTATION ENGINEERING-I
 (Civil Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answer **ALL** the question in **Part-A**
 3. Answer any **FOUR** Questions from **Part-B**

PART-A (14 Marks)

1. a) What are the various road patterns? (3M)
- b) What is superelevation? (2M)
- c) What is condition diagram? (2M)
- d) What is modulus of subgrade reaction? (2M)
- e) Discuss about temperature stresses in rigid pavements. (3M)
- f) Define overlay. (2M)

PART-B (4x14 = 56 Marks)

2. a) Explain the necessity and objectives of highway planning. (7M)
- b) Briefly explain the engineering surveys needed for locating a new highway. (7M)
3. a) Derive an expression for finding length of transition curve on horizontal alignment of highways. (7M)
- b) A valley curve is formed by a descending grade of 1 in 25 meeting an ascending grade of 1 in 30. Design the length of valley curve to fulfill both comfort condition and head light sight distance requirements for a design speed of 80 kmph. Assume allowable rate of change of centrifugal acceleration $C=0.6\text{m/sec}^3$, $f=0.35$ and $t=2.5$ sec. (7M)
4. a) Explain the various types of traffic signs with neat sketches. (7M)
- b) Explain how the speed and delay studies are carried out. What are the various uses of speed and delay studies. (7M)
5. a) What are the various tests carried out on bitumen? Briefly mention the principle and uses of each test. (7M)
- b) Explain in detail the Los Angeles abrasion test to decide the suitability of road stones for use in construction (7M)
6. a) Explain CBR and also the laboratory tests and field tests. How are the results of the test obtained and interpreted? (7M)
- b) Discuss Westergaard's concept of temperature stresses in cement concrete pavements. (7M)
7. a) What are the materials required in plants and equipment write the construction steps for the surface dressing bituminous construction. (7M)
- b) Enumerate the steps in the construction of cement concrete pavement. (7M)

